
python_ics Documentation

Release 2.12

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Python C Code module for interfacing to the icsneo40 dynamic library. Code tries to respect PEP 8 (<http://python.org/dev/peps/pep-0008>). Function naming convention does not follow the tradition c style icsneo40 naming convention as pyics module name acts as the namespace (icsneo portion of the function) and function names are suppose to be lowercase with underscores instead of mixedCase like icsneo API.

C API can be mimiced almost identically by doing the following:

```
>>> import ics as icsneo
>>> devices = icsneo.FindNeoDevices()
>>> for device in devices:
...     print(device.Name, device.SerialNumber)
...
neoVI FIRE 59886
```

Recommended *Python* way by doing the following:

```
>>> import ics
>>> devices = ics.find_devices()
>>> for device in devices:
...     print(device.Name, device.SerialNumber)
...
neoVI FIRE 59886
```

It should be noted that `ics.NeoDevice` is used a little bit differently than the C API. `ics.NeoDevice` contains two extra members:

`ics.NeoDevice.AutoHandleClose` and `ics.NeoDevice._Handle`

The handle normally returned from `icsneoOpenNeoDevice()` is stored inside `_Handle` and setting `AutoHandleClose` to `True` (Default) will automatically close the handle when the `ics.NeoDevice` goes out of scope.

Installation:

```
pip install python_ics
```

<https://pypi.python.org/pypi/python-ics>

```
exception ics.ArgumentError
```

```
Bases: Exception
```

```
exception ics.RuntimeError
```

```
Bases: Exception
```

```
class ics.ApiFirmwareInfo
```

```
Bases: object
```

```
ApiFirmwareInfo object
```

```
iAppMajor
```

```
iAppMinor
```

```
iBoardRevMajor
```

```
iBoardRevMinor
```

```
iBootLoaderVersionMajor
```

```
iBootLoaderVersionMinor
```

```
iMainFirmChkSum
```

```
iMainFirmDateDay
```

```
iMainFirmDateHour
```

iMainFirmDateMin
iMainFirmDateMonth
iMainFirmDateSecond
iMainFirmDateYear
iMainVnetHWrevMajor
iMainVnetHWrevMinor
iMainVnetSRAMSize
iManufactureDay
iManufactureMonth
iManufactureYear
iType

class ics.CanFdSettings

Bases: object

CanFdSettings object

FDBRP

FDBaudrate

FDMode

FDTqProp

FDTqSeg1

FDTqSeg2

FDTqSync

class ics.CanSettings

Bases: object

CanSettings object

BRP

Baudrate

The bit rate of a CAN channel can be selected from a list of common bit rates Write the correct enumeration for the desired bit rate and ensure that SetBaudrate is 1(auto)

Mode

CAN controller mode when the neoVI device goes online or runs a CoreMini script. Normal=0 Disabled=1 Listen Only=3 Listen All=7

SetBaudrate

The bit rate of a CAN channel can be selected one of two ways. It can either be selected from a list of common bit rates (SetBaudrate=1) or the user can specify the CAN timing parameters (SetBaudrate=0)

TqProp

Propagation delay

TqSeg1

Phase 1 segment

TqSeg2

Phase 2 segment

TqSync

Syncro jump width

auto_baud

Enables the auto bitrate feature. 1 = enable, 0 = disable.

innerFrameDelay25us**transceiver_mode**

Currently Not used.

class ics.CmISO157652RxMessage

Bases: object

CmISO157652RxMessage object

blockSize

Overrides the block size that the receiver reports, see overrideBlockSize. Set to J2534's BS_TX if <= 0xFF

cf_timeout

max timeout (ms) for waiting on consecutive frame. Set this to N_CR_MAX's value in J2534

extendedAddress

Extended Address byte of transmitter. see ext_address_enable, not supported

fc_id

flow control arbId to transmit in flow control (from neoVI to ECU)

flags**flowControlExtendedAddress**

Expected Extended Address byte of response from receiver. see fc_ext_address_enable, not supported

id

arbId of transmitted frames (CAN id to transmit to)

id_mask

ArbId filter mask for frames from transmitter (from ECU to neoVI)

padding

The padding byte to use to fill the unused portion of * transmitted CAN frames (flow control), see paddingEnable.

reserved**stMin**

Minimum separation time (between consecutive frames) to report in flow control response

vs_netid

The netid of the message (determines which network to decode receives), not supported

class ics.CmISO157652TxMessage

Bases: object

CmISO157652TxMessage object

blockSize

Overrides the block size that the receiver reports, see overrideBlockSize. Set to J2534's BS_TX if <= 0xFF

data

The data

extendedAddress

Extended Address byte of transmitter. see ext_address_enable, not supported

fc_id
flow control arb id filter value (response id from receiver)

fc_id_mask
The flow control arb filter mask (response id from receiver)

flags

flowControlExtendedAddress
Expected Extended Address byte of response from receiver. see fc_ext_address_enable, not supported

fs_timeout
max timeout (ms) for waiting on flow control respons. Set this to N_BS_MAX's value if J2534

fs_wait
max timeout (ms) for waiting on flow control response after receiving flow control * with flow status set to WAIT. Set this to N_BS_MAX's value if J2534.

id
arbId of transmitted frames (CAN id to transmit to)

num_bytes
Number of data bytes

padding
The padding byte to use to fill the unused portion of * transmitted CAN frames (single frame, first frame, consecutive frame) *

stMin
Overrides the stMin that the receiver reports, see overrideSTmin. Set to J2534's STMIN_TX if <= 0xFF

tx_index

vs_netid
The netid of the message (determines which network to transmit on), not supported

class ics.CyanSettings

Bases: object

CyanSettings object

ain_sample_period

ain_threshold

can1
ics.CanSettings Object

can2
ics.CanSettings Object

can3
ics.CanSettings Object

can4
ics.CanSettings Object

can5
ics.CanSettings Object

can6
ics.CanSettings Object

can7
ics.CanSettings Object

can8
ics.CanSettings Object

can_switch_mode

canfd1
ics.CanFdSettings Object

canfd2
ics.CanFdSettings Object

canfd3
ics.CanFdSettings Object

canfd4
ics.CanFdSettings Object

canfd5
ics.CanFdSettings Object

canfd6
ics.CanFdSettings Object

canfd7
ics.CanFdSettings Object

canfd8
ics.CanFdSettings Object

digitalIoThresholdEnable

digitalIoThresholdTicks

disableUsbCheckOnBoot

enableLatencyTest

ethernet
ics.EthernetSettings Object

idle_wakeup_network_enables_3

iso15765_separation_time_offset

iso9141_kwp_settings_1
Iso9141Keyword2000Settings Object

iso9141_kwp_settings_2
Iso9141Keyword2000Settings Object

iso9141_kwp_settings_3
Iso9141Keyword2000Settings Object

iso9141_kwp_settings_4
Iso9141Keyword2000Settings Object

iso_msg_termination_1
0 - use inner frame time, 1 - GME CIM-SCL

iso_msg_termination_2
0 - use inner frame time, 1 - GME CIM-SCL

iso_msg_termination_3
0 - use inner frame time, 1 - GME CIM-SCL

iso_msg_termination_4
0 - use inner frame time, 1 - GME CIM-SCL

iso_parity_1
0 - no parity, 1 - event, 2 - odd

iso_parity_2
0 - no parity, 1 - event, 2 - odd

iso_parity_3
0 - no parity, 1 - event, 2 - odd

iso_parity_4
0 - no parity, 1 - event, 2 - odd

lin1
ics.LinSettings Object

lin2
ics.LinSettings Object

lin3
ics.LinSettings Object

lin4
ics.LinSettings Object

lin5
ics.LinSettings Object

lin6
ics.LinSettings Object

lsft1
ics.CanSettings Object

lsft2
ics.CanSettings Object

misc_io_analog_enable

misc_io_initial_ddr

misc_io_initial_latch

misc_io_on_report_events

misc_io_report_period

network_enabled_on_boot

network_enables

network_enables_2

network_enables_3

perf_en

pwr_man_enable

pwr_man_timeout

reserved

slaveVnetA

slaveVnetB

swcan1
ics.SWCanSettings Object

swcan2
ics.SWCanSettings Object

termination_enables

text_api
ics.TextApiSettings Object

class ics.EthernetSettings
Bases: object
EthernetSettings object

auto_neg

duplex

led_mode

link_speed

rsvd

class ics.Fire2DeviceStatus
Bases: object
Fire2DeviceStatus object

backupPowerEnabled

backupPowerGood

ethernetActivationLineEnabled

usbHostPowerEnabled

class ics.FireSettings
Bases: object
FireSettings object

ain_sample_period

ain_threshold

can1
ics.CanSettings Object

can2
ics.CanSettings Object

can3
ics.CanSettings Object

can4
ics.CanSettings Object

cgi_baud

cgi_chksum_enable

cgi_enable_reserved

cgi_rx_ifs_bit_times
cgi_tx_ifs_bit_times
fast_init_network_enables_1
fast_init_network_enables_2
iso15765_separation_time_offset
iso9141_kwp_enable_reserved
iso9141_kwp_settings
 Iso9141Keyword2000Settings Object
iso9141_kwp_settings_2
 Iso9141Keyword2000Settings Object
iso9141_kwp_settings_3
 Iso9141Keyword2000Settings Object
iso9141_kwp_settings_4
 Iso9141Keyword2000Settings Object
iso_msg_termination
 0 - use inner frame time, 1 - GME CIM-SCL
iso_msg_termination_2
 0 - use inner frame time, 1 - GME CIM-SCL
iso_msg_termination_3
 0 - use inner frame time, 1 - GME CIM-SCL
iso_msg_termination_4
 0 - use inner frame time, 1 - GME CIM-SCL
iso_parity
 0 - no parity, 1 - event, 2 - odd
iso_parity_2
 0 - no parity, 1 - event, 2 - odd
iso_parity_3
 0 - no parity, 1 - event, 2 - odd
iso_parity_4
 0 - no parity, 1 - event, 2 - odd
iso_tester_pullup_enable
lin1
 ics.LinSettings Object
lin2
 ics.LinSettings Object
lin3
 ics.LinSettings Object
lin4
 ics.LinSettings Object
lsft
 ics.CanSettings Object
misc_io_analog_enable

misc_io_initial_ddr
misc_io_initial_latch
misc_io_on_report_events
misc_io_report_period
network_enabled_on_boot
network_enables
network_enables_2
perf_en
pwm_man_timeout
pwr_man_enable
swcan
 ics.SWCanSettings Object
text_api
 ics.TextApiSettings Object
uart
 ics.UartSettings Object
uart2
 ics.UartSettings Object
vnetBits

class ics.IcsDeviceStatus
 Bases: object
 IcsDeviceStatus object
 fire2Status
 ics.Fire2DeviceStatus Object

class ics.Iso9141Keyword2000InitSteps
 Bases: object
 Iso9141Keyword2000InitSteps object
 k
 l
 time_500us

class ics.Iso9141Keyword2000Settings
 Bases: object
 Iso9141Keyword2000Settings object
 Baudrate
 brgh
 chksum_enabled
 init_steps
 Tuple of Iso9141Keyword2000InitSteps
 p2_500us

p3_500us

p4_500us

spbrg

class ics.LinSettings

Bases: object

LinSettings object

Baudrate

MasterResistor

Mode

brgh

spbrg

class ics.NeoDevice

Bases: object

NeoDevice object

AutoHandleClose

When NeoDevice is freed the handle will automatically be closed, if true.

DeviceType

Handle

IsOpen

This contains the handle returned from icsneoOpenDevice() API. If uncertain, don't use this.

MaxAllowedClients

Name

String describing DeviceType, extension to Python api only.

NumberOfClients

SerialNumber

class ics.OpEthGeneralSettings

Bases: object

OpEthGeneralSettings object

bEnReportLinkQuality

bTapEnPtp

bTapEnSwitch

reserved0

tapPair0

tapPair1

tapPair2

tapPair3

tapPair4

tapPair5

ucInterfaceType

class ics.OpEthSettings

Bases: object

OpEthSettings object

preemption_en

reserved0

ucConfigMode

class ics.RadGalaxySettings

Bases: object

RadGalaxySettings object

ain_sample_period

ain_threshold

can1

ics.CanSettings Object

can2

ics.CanSettings Object

can3

ics.CanSettings Object

can4

ics.CanSettings Object

can5

ics.CanSettings Object

can6

ics.CanSettings Object

can7

ics.CanSettings Object

can8

ics.CanSettings Object

can_switch_mode

canfd1

ics.CanFdSettings Object

canfd2

ics.CanFdSettings Object

canfd3

ics.CanFdSettings Object

canfd4

ics.CanFdSettings Object

canfd5

ics.CanFdSettings Object

canfd6

ics.CanFdSettings Object

canfd7
ics.CanFdSettings Object

canfd8
ics.CanFdSettings Object

idle_wakeup_network_enables_1

idle_wakeup_network_enables_2

idle_wakeup_network_enables_3

iso15765_separation_time_offset

iso9141_kwp_settings_1
Iso9141Keyword2000Settings Object

iso_msg_termination_1
0 - use inner frame time, 1 - GME CIM-SCL

iso_parity_1
0 - no parity, 1 - event, 2 - odd

lin1
ics.LinSettings Object

misc_io_analog_enable

misc_io_initial_ddr

misc_io_initial_latch

misc_io_on_report_events

misc_io_report_period

network_enabled_on_boot

network_enables

network_enables_2

network_enables_3

opEth1
ics.OpEthSettings Object

opEth10
ics.OpEthSettings Object

opEth11
ics.OpEthSettings Object

opEth12
ics.OpEthSettings Object

opEth2
ics.OpEthSettings Object

opEth3
ics.OpEthSettings Object

opEth4
ics.OpEthSettings Object

opEth5
ics.OpEthSettings Object

opEth6
ics.OpEthSettings Object

opEth7
ics.OpEthSettings Object

opEth8
ics.OpEthSettings Object

opEth9
ics.OpEthSettings Object

opEthGen
ics.OpEthGeneralSettings Object

perf_en

pwr_man_enable

pwr_man_timeout

swcan1
ics.SWCanSettings Object

swcan2
ics.SWCanSettings Object

text_api
ics.TextApiSettings Object

class ics.SWCanSettings

Bases: object

SWCanSettings object

BRP

Baudrate

The bit rate of a CAN channel can be selected from a list of common bit rates Write the correct enumeration for the desired bit rate and ensure that SetBaudrate is 1(auto)

Mode

CAN controller mode when the neoVI device goes online or runs a CoreMini script. Normal=0 Disabled=1 Listen Only=3 Listen All=7

RESERVED

SetBaudrate

The bit rate of a CAN channel can be selected one of two ways. It can either be selected from a list of common bit rates (SetBaudrate=1) or the user can specify the CAN timing parameters (SetBaudrate=0)

TqProp

Propagation delay

TqSeg1

Phase 1 segment

TqSeg2

Phase 2 segment

TqSync

Syncro jump width

auto_baud

Enables the auto bitrate feature. 1 = enable, 0 = disable.

high_speed_auto_switch

transceiver_mode

Currently Not used.

class ics.SpyMessage

Bases: object

SpyMessage object

AckBytes

ArbIDOrHeader

Data

DescriptionID

Not Used

ExtraDataPtr

ExtraDataPtrEnabled

MessagePieceID

Not Used

MiscData

NetworkID

This value is used to identify which network this message was received on.

NetworkID2

This value is used to identify which network this message was received on.

NodeID

Not Used

NumberBytesData

Holds the number of bytes in the Data(1 to 8) array or the number of bytes in a CAN remote frame (The DLC).

NumberBytesHeader

Used for J1850/ISO messages. It indicates how many bytes are stored in the Header(1 to 4) array.

Protocol

Valid values are SPY_PROTOCOL_CAN, SPY_PROTOCOL_J1850VPW, and SPY_PROTOCOL_ISO9141.

StatusBitField

StatusBitField2

StatusBitField3

StatusBitField4

TimeHardware

Hardware time stamp. The TimeStamp is reset on device open

TimeHardware2

Hardware time stamp. The TimeStamp is reset on device open

TimeStampHardwareID

This is an identifier of what type of hardware timestamp is used. Since neoVI's timestamp is always the same, this doesn't change.

TimeStampSystemID

This is an identifier of what type of system timestamp is used. Since WIN32 neoVI's timestamp is always the same, from the timeGetTime API, this doesn't change.

TimeSystem

TimeSystem is loaded with the value received from the timeGetTime call in the WIN32 multimedia API.

TimeSystem2

TimeSystem is loaded with the value received from the timeGetTime call in the WIN32 multimedia API.

noExtraDataPtrCleanup

Tells Python to not clean up ExtraDataPtrMemory, If this is enabled. Ignore, if unsure.

class ics.SpyMessageJ1850

Bases: object

SpyMessageJ1850 object

AckBytes**Data****DescriptionID**

Not Used

ExtraDataPtr**ExtraDataPtrEnabled****Header****MessagePieceID**

Not Used

MiscData**NetworkID**

This value is used to identify which network this message was received on.

NetworkID2

This value is used to identify which network this message was received on.

NodeID

Not Used

NumberBytesData

Holds the number of bytes in the Data(1 to 8) array or the number of bytes in a CAN remote frame (The DLC).

NumberBytesHeader

Used for J1850/ISO messages. It indicates how many bytes are stored in the Header(1 to 4) array.

Protocol

Valid values are SPY_PROTOCOL_CAN, SPY_PROTOCOL_J1850VPW, and SPY_PROTOCOL_ISO9141.

StatusBitField**StatusBitField2****StatusBitField3****StatusBitField4****TimeHardware**

Hardware time stamp. The TimeStamp is reset on device open

TimeHardware2

Hardware time stamp. The TimeStamp is reset on device open

TimeStampHardwareID

This is an identifier of what type of hardware timestamp is used. Since neoVI's timestamp is always the same, this doesn't change.

TimeStampSystemID

This is an identifier of what type of system timestamp is used. Since WIN32 neoVI's timestamp is always the same, from the timeGetTime API, this doesn't change.

TimeSystem

TimeSystem is loaded with the value received from the timeGetTime call in the WIN32 multimedia API.

TimeSystem2

TimeSystem is loaded with the value received from the timeGetTime call in the WIN32 multimedia API.

noExtraDataPtrCleanup

Tells Python to not clean up ExtraDataPtrMemory, If this is enabled. Ignore, if unsure.

class ics.TextApiSettings

Bases: object

TextApiSettings object

can1_options

Sets the length of the Arbitration ID's. Set to 1 for Extended and 0 for Standard

can1_rx_id

Sets or Reads the Arbitration ID for Sending Receiving API commands

can1_tx_id

Sets or Reads the Arbitration ID for Sending Text API commands

can2_options**can2_rx_id****can2_tx_id****can3_options****can3_rx_id****can3_tx_id****can4_options****can4_rx_id****can4_tx_id****network_enables**

Bitfield telling which network to support Text API.

class ics.UartSettings

Bases: object

UartSettings object

Baudrate

Holds the baud rate for the UART Connection. An example value could be 10417 or 9600

bOptions

Bitfield containing UART Options Invert TX=1, Invert RX=2, Half Duplex=4

brgh

flow_control

Set to 0 for no flow control and 1 for simple CTS RTS

parity

Sets the Parity type. Valid values are None=0, Even=1, Odd=2

reserved_1

spbrg

stop_bits

Sets the number of stop bits to use. Valid values are One=1, Two=2

class ics.Vcan3Settings

Bases: object

Vcan3Settings object

can1

ics.CanSettings Object

can2

ics.CanSettings Object

iso15765_separation_time_offset

misc_io_initial_ddr

misc_io_initial_latch

misc_io_on_report_events

misc_io_report_period

network_enabled_on_boot

network_enables

perf_en

class ics.Vcan412Settings

Bases: object

Vcan412Settings object

can1

ics.CanSettings Object

can2

ics.CanSettings Object

canfd1

ics.CanFdSettings Object

canfd2

ics.CanFdSettings Object

disableUsbCheckOnBoot

flags

enableLatencyTest

flags

iso15765_separation_time_offset

network_enabled_on_boot
network_enables
perf_en
pwr_man_enable
pwr_man_timeout
reserved
 flags
termination_enables
text_api
 ics.TextApiSettings Object

class ics.VcanRFSettings

Bases: object

VcanRFSettings object

can1
 ics.CanSettings Object

can2
 ics.CanSettings Object

can3
 ics.CanSettings Object

can4
 ics.CanSettings Object

idle_wakeup_network_enables_1

idle_wakeup_network_enables_2

iso15765_separation_time_offset

iso9141_kwp_enable_reserved

iso9141_kwp_settings
 ics.Iso9141Keyword2000Settings Object

iso9141_kwp_settings_2
 ics.Iso9141Keyword2000Settings Object

iso_msg_termination
 0 - use inner frame time, 1 - GME CIM-SCL

iso_msg_termination_2
 0 - use inner frame time, 1 - GME CIM-SCL

iso_parity
 0 - no parity, 1 - event, 2 - odd

iso_parity_2
 0 - no parity, 1 - event, 2 - odd

iso_tester_pullup_enable

lin1
 ics.LinSettings Object

lin2
ics.LinSettings Object

misc_io_analog_enable

misc_io_initial_ddr

misc_io_initial_latch

misc_io_on_report_events

misc_io_report_period

network_enabled_on_boot

network_enables

network_enables_2

perf_en

pwr_man_enable
0 - off, 1 - sleep enabled, 2- idle enabled (fast wakeup)

pwr_man_timeout

class ics.VividCANSettings
Bases: object

VividCANSettings object

can1
ics.CanSettings Object

can_switch_mode

disableUsbCheckOnBoot
flags

ecu_id

enableLatencyTest
flags

isol5765_separation_time_offset

lsftcan1
ics.CanSettings Object

network_enabled_on_boot

network_enables

perf_en

pwr_man_enable

pwr_man_timeout

reserved
flags

swcan1
ics.CanSettings Object

termination_enables

`ics.ClosePort()`

Note: Identical to PEP8 compliant `ics.close_device()` method.

`ics.FindNeoDevices()`

Note: Identical to PEP8 compliant `ics.find_devices()` method.

`ics.GetDLLVersion()`

Note: Identical to PEP8 compliant `ics.get_dll_version()` method.

`ics.GetErrorMessages()`

Note: Identical to PEP8 compliant `ics.get_error_messages()` method.

`ics.GetHWFirmwareInfo()`

Note: Identical to PEP8 compliant `ics.get_hw_firmware_info()` method.

`ics.GetLastError()`

Note: Identical to PEP8 compliant `ics.get_last_api_error()` method.

`ics.GetMessages()`

Note: Identical to PEP8 compliant `ics.get_messages()` method.

`ics.GetPerformanceParameters()`

Note: Identical to PEP8 compliant `ics.get_performance_parameters()` method.

`ics.GetRTC()`

Note: Identical to PEP8 compliant `ics.get_rtc()` method.

`ics.GetSerialNumber()`

Note: Identical to PEP8 compliant `ics.get_serial_number()` method.

`ics.OpenNeoDevice()`

Note: Identical to PEP8 compliant `ics.open_device()` method.

`ics.RequestEnterSleepMode()`

Note: Identical to PEP8 compliant `ics.request_enter_sleep_mode()` method.

`ics.ScriptClear()`

Note: Identical to PEP8 compliant `ics.coremini_clear()` method.

`ics.ScriptGetFBlockStatus()`

Note: Identical to PEP8 compliant `ics.coremini_get_fblock_status()` method.

`ics.ScriptGetScriptStatus()`

Note: Identical to PEP8 compliant `ics.coremini_get_status()` method.

`ics.ScriptLoad()`

Note: Identical to PEP8 compliant `ics.coremini_load()` method.

`ics.ScriptReadAppSignal()`

Note: Identical to PEP8 compliant `ics.coremini_read_app_signal()` method.

`ics.ScriptReadRxMessage()`

Note: Identical to PEP8 compliant `ics.coremini_read_rx_message()` method.

`ics.ScriptReadTxMessage()`

Note: Identical to PEP8 compliant `ics.coremini_read_tx_message()` method.

`ics.ScriptStart()`

Note: Identical to PEP8 compliant `ics.coremini_start()` method.

`ics.ScriptStartFBlock()`

Note: Identical to PEP8 compliant `ics.coremini_start_fblock()` method.

`ics.ScriptStop()`

Note: Identical to PEP8 compliant `ics.coremini_stop()` method.

`ics.ScriptStopFBlock()`

Note: Identical to PEP8 compliant `ics.coremini_stop_fblock()` method.

`ics.ScriptWriteAppSignal()`

Note: Identical to PEP8 compliant `ics.coremini_write_app_signal()` method.

`ics.ScriptWriteRxMessage()`

Note: Identical to PEP8 compliant `ics.coremini_write_rx_message()` method.

`ics.ScriptWriteTxMessage()`

Note: Identical to PEP8 compliant `ics.coremini_write_tx_message()` method.

`ics.SetRTC()`

Note: Identical to PEP8 compliant `ics.set_rtc()` method.

`ics.SetReflashDisplayCallback()`

Note: Identical to PEP8 compliant `ics.set_reflash_callback()` method.

`ics.TxMessages()`

Note: Identical to PEP8 compliant `ics.transmit_messages()` method.

`ics.ValidateHObject()`

Note: Identical to PEP8 compliant `ics.validate_hobject()` method.

`ics.base36enc(serial)`

Converts a decimal serial number to base36.

Args: serial (int): serial number.

Raises: `ics.RuntimeError`

Returns: Str: Serial Number

```
>>> ics.base36enc(device.SerialNumber)
CY0024
```

`ics.close_device(device)`

Closes the device.

Args: device (`ics.NeoDevice`): `ics.NeoDevice`

Raises: `ics.RuntimeError`

Returns: Error Count (int)

```
>>> for device in ics.find_devices():
...     ics.open_device(device)
...     # Do something with the device...
...     ics.close_device(device)
... 
```

Note: `ics.NeoDevice` will automatically close the device when it goes out of scope.

`ics.coremini_clear(device, location)`

Clears the CoreMini into the device.

Args: device (`ics.NeoDevice`): `ics.NeoDevice`

location (int): Accepts `ics.SCRIPT_LOCATION_FLASH_MEM`, `ics.SCRIPT_LOCATION_SDCARD`, or `ics.SCRIPT_LOCATION_VCAN3_MEM`

Raises: `ics.RuntimeError`

Returns: None.

```
>>> device = ics.open_device()
>>> ics.coremini_clear(device, ics.SCRIPT_LOCATION_SDCARD)
```

ics.coremini_get_fblock_status (*device*, *index*)
Gets the status of a Coremini Function Block at *index* on *device*.

Args: *device* (*ics.NeoDevice*): *ics.NeoDevice*

index (int): Index of the function block.

Raises: *ics.RuntimeError*

Returns: None on Success.

```
>>> device = ics.open_device()
>>> ics.coremini_get_fblock_status(device, 1)
True
```

ics.coremini_get_status (*device*)
Gets the status of the CoreMini in the device.

Args: *device* (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: True if running, otherwise False.

```
>>> device = ics.open_device()
>>> ics.coremini_get_status(device)
>>>
```

ics.coremini_load (*device*, *coremini*, *location*)
Loads the CoreMini into the device.

Args: *device* (*ics.NeoDevice*): *ics.NeoDevice*

coremini (str/tuple): Use string to load from file, Use Tuple if file data.

location (int): Accepts *ics.SCRIPT_LOCATION_FLASH_MEM*, *ics.SCRIPT_LOCATION_SDCARD*, or *ics.SCRIPT_LOCATION_VCAN3_MEM*

Raises: *ics.RuntimeError*

Returns: None.

```
>>> device = ics.open_device()
>>> ics.coremini_load(device, 'cmvspy.vs3cmb', ics.SCRIPT_LOCATION_SDCARD)
```

ics.coremini_read_app_signal (*device*, *index*)
Gets the value of a Coremini application signal at *index* on *device*.

Args: *device* (*ics.NeoDevice*): *ics.NeoDevice*

index (int): Index of the application signal.

Raises: *ics.RuntimeError*

Returns: int on Success.

```
>>> device = ics.open_device()
>>> ics.coremini_read_app_signal(device, 1)
52
```

`ics.coremini_read_rx_message(device, index, j1850=False)`

Gets the value of a Coremini Message at *index* on *device*.

Args: *device* (`ics.NeoDevice`): `ics.NeoDevice`

index (int): Index of the application signal.

j1850 (bool): Use `ics.SpyMessageJ1850` instead.

Raises: `ics.RuntimeError`

Returns: `ics.SpyMessage` Success.

```
>>> device = ics.open_device()
>>> msg = ics.coremini_read_tx_message(device, 0)
```

`ics.coremini_read_tx_message(device, index, j1850=False)`

Gets the value of a Coremini Message at *index* on *device*.

Args: *device* (`ics.NeoDevice`): `ics.NeoDevice`

index (int): Index of the application signal.

j1850 (bool): Use `ics.SpyMessageJ1850` instead.

Raises: `ics.RuntimeError`

Returns: `ics.SpyMessage` Success.

```
>>> device = ics.open_device()
>>> msg = ics.coremini_read_tx_message(device, 0)
```

`ics.coremini_start(device, location)`

Starts the CoreMini into the device.

Args: *device* (`ics.NeoDevice`): `ics.NeoDevice`

location (int): Accepts `ics.SCRIPT_LOCATION_FLASH_MEM`, `ics.SCRIPT_LOCATION_SDCARD`, or `ics.SCRIPT_LOCATION_VCAN3_MEM`

Raises: `ics.RuntimeError`

Returns: None.

```
>>> device = ics.open_device()
>>> ics.coremini_start(device, ics.SCRIPT_LOCATION_SDCARD)
```

`ics.coremini_start_fblock(device, index)`

Starts a Coremini Function Block at *index* on *device*.

Args: *device* (`ics.NeoDevice`): `ics.NeoDevice`

index (int): Index of the function block.

Raises: `ics.RuntimeError`

Returns: None on Success.

```
>>> device = ics.open_device()
>>> ics.coremini_start_fblock(device, 1)
```

`ics.coremini_stop(device)`

Stops the CoreMini into the device.

Args: *device* (`ics.NeoDevice`): `ics.NeoDevice`

Raises: `ics.RuntimeError`

Returns: None.

```
>>> device = ics.open_device()
>>> ics.coremini_stop(device)
```

`ics.coremini_stop_fblock(device, index)`

Stops a Coremini Function Block at *index* on *device*.

Args: *device* (`ics.NeoDevice`): `ics.NeoDevice`

index (int): Index of the function block.

Raises: `ics.RuntimeError`

Returns: None on Success.

```
>>> device = ics.open_device()
>>> ics.coremini_stop_fblock(device, 1)
```

`ics.coremini_write_app_signal(device, index, value)`

Sets the value of a Coremini application signal at *index* on *device*.

Args: *device* (`ics.NeoDevice`): `ics.NeoDevice`

index (int): Index of the application signal.

value (int): New value of the application signal.

Raises: `ics.RuntimeError`

Returns: None on Success.

```
>>> device = ics.open_device()
>>> ics.coremini_write_app_signal(device, 1, 52)
>>>
```

`ics.coremini_write_rx_message(device, index, TODO)`

TODO

`ics.coremini_write_tx_message(device, index, msg)`

TODO

`ics.create_neovi_radio_message(Relay1, Relay2, Relay3, Relay4, Relay5, LED6, LED5, MSB_report_rate, LSB_report_rate, ana-log_change_report_rate, relay_timeout)`

Python API only. Generates data bytes for use with neoVI RADI/O CAN Messages

Kwargs: Relay1 (boolean): Enable/Disable Relay1

Relay2 (boolean): Enable/Disable Relay2

Relay3 (boolean): Enable/Disable Relay3

Relay4 (boolean): Enable/Disable Relay4

Relay5 (boolean): Enable/Disable Relay5

LED5 (boolean): Enable/Disable LED5

LED6 (boolean): Enable/Disable LED6

MSB_report_rate (int): MSB Report Rate in ms (0-255)

LSB_report_rate (int): LSB Report Rate in ms (0-255)

analog_change_report_rate (int): Analog change report rate

relay_timeout (int): Relay Timeout (0-255)*255ms

Returns:

Tuple of data bytes for use with *ics.SpyMessage*

Raises: *ics.RuntimeError*

```
>>> msg = ics.SpyMessage()
>>> msg.Data = ics.create_neovi_radio_message(Relay1=True, Relay4=False,
↪ LED6=True, MSB_report_rate=10)
>>> msg.Data
(65, 10, 0, 0, 0)
```

ics.find_devices (*device_type=ics.NEODEVICE_ALL*)

Finds all connected devices and returns a tuple of *ics.NeoDevice* for use in *ics.open_device()*

Args: *device_type* (int): Accepts *ics.NEODEVICE_** Macros

New in 3.0 (803):

device_type (List/Tuple): Accepts a Container of *ics.NEODEVICE_** Macros

stOptionsOpenNeoEx (int): Usually *ics.NETID_CAN*, if needed

Raises: *ics.RuntimeError*

Returns: Tuple of *ics.NeoDevice* for use in *ics.open_device()*

```
>>> for device in ics.find_devices():
...     print(device.Name, device.SerialNumber)
...
neoVI FIRE 59886
```

New in 3.0 (803):

```
>>> for device in ics.find_devices([ics.NEODEVICE_FIRE, ics.NEODEVICE_VCAN3]):
...     print(device.Name, device.SerialNumber)
...
neoVI FIRE 59886
```

ics.firmware_update_required (*device*)

Determines if the device firmware needs flashing.

Args: *device* (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Boolean: True on success, False on failure.

```
>>> ics.force_firmware_update(device)
True
```

ics.force_firmware_update (*device*)

Forces the device to flash firmware.

Args: *device* (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Boolean: True on success, False on failure.

```
>>> ics.force_firmware_update(device)
True
```

ics.get_active_vnet_channel(*device*)

Gets active vnet channel for the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Int: Returns active vnet channel.

ics.get_backup_power_enabled(*device*)

Returns the device backup power enabled for the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Boolean: True on success, False on failure.

ics.get_backup_power_ready(*device*)

Returns the device backup power is ready for the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Boolean: True on success, False on failure.

ics.get_device_settings(*device*, *device_type*)

Gets the settings in the device. *device_type* can override which setting object we deal with normally

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: *ics.Vcan3Settings* or *ics.FireSettings*.

```
>>> device = ics.open_device()
>>> settings = ics.get_device_settings(device)
>>> type(settings)
<class 'ics.FireSettings'>
>>>
```

ics.get_device_status(*device*)

Returns the device status.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: (*ics.IcsDeviceStatus*).

```
>>> import ics
>>> d = ics.open_device()
>>> status = ics.get_device_status(d)
>>> status.fire2Status.ethernetActivationLineEnabled
0
```

ics.get_dll_firmware_info(*device*)

Returns the DLL firmware info for the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: `ics.RuntimeError`

Returns: (`ics.ApiFirmwareInfo`)

```
>>> device = ics.open_device()
>>> info = ics.get_dll_firmware_info(device)
>>> info.iAppMajor
7
>>> info.iAppMinor
55
>>>
```

`ics.get_dll_version(device)`

Gets the DLL version.

Args: None

Raises: `ics.RuntimeError`

Returns: Int: DLL Version

```
>>> ics.get_dll_version()
700
```

`ics.get_error_messages(device[,j1850, timeout])`

Gets the error message(s) on the device.

Args: device (`ics.NeoDevice`): `ics.NeoDevice`

Raises: `ics.RuntimeError`

Returns: list of tuple`s. :class:`tuple` contents: (error_number, description_short, description_long, severity, restart_needed)

```
>>> device = ics.open_device()
>>> errors = ics.get_error_messages(device)
```

`ics.get_hw_firmware_info(device)`

Returns the device firmware info for the device.

Args: device (`ics.NeoDevice`): `ics.NeoDevice`

Raises: `ics.RuntimeError`

Returns: (`ics.ApiFirmwareInfo`)

```
>>> device = ics.open_device()
>>> info = ics.get_hw_firmware_info(device)
>>> info.iAppMajor
7
>>> info.iAppMinor
55
>>>
```

`ics.get_last_api_error(device)`

Gets the error message from the last API call.

Args: device (`ics.NeoDevice`): `ics.NeoDevice`

Raises: `ics.RuntimeError`

Returns: Tuple: (error, description short, description long, severity, restart needed)

```
>>> device = ics.open_device()
>>> try:
...     msg = ics.coremini_read_tx_message(device, 0)
... except ics.RuntimeError as ex:
...     print(ex)
...     print(ics.get_last_api_error(device))
...
Error: coremini_read_tx_message(): icsneoScriptReadTxMessage() Failed
(224, 'Invalid Message Index for script.', 'Invalid Message Index for script.
↳ ', 16, 0)
```

ics.get_library_path()

ics.get_messages(*device* [, *j1850*, *timeout*])

Gets the message(s) on the device.

Args: *device* (*ics.NeoDevice*): *ics.NeoDevice*

j1850 (bool): Return *ics.SpyMessageJ1850* instead.

imeout (float): Optional timeout to wait for messages in seconds (0.1 = 100ms).

Raises: *ics.RuntimeError*

Returns: tuple of two items. First item is a tuple of *ics.SpyMessage* and second is the error count.

```
>>> device = ics.open_device()
>>> messages, errors = ics.get_messages(device)
>>> len(messages)
14
>>> hex(messages[0].ArbIDOrHeader)
'0x160'
>>> messages[0].Data
(36, 11, 11, 177, 37, 3, 11, 199)
>>> errors
0
```

ics.get_performance_parameters(*device*)

Gets the Performance Parameters on *device*.

Args: *device* (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Tuple on Success: (buffer count, buffer max, overflow count, reserved, reserved, reserved, reserved, reserved)

```
>>> device = ics.open_device()
>>> ics.get_performance_parameters(device)
(0, 24576, 0, 0, 0, 0, 0, 0)
```

ics.get_rtc(*device*)

Gets the Real-Time Clock of the device.

Args: *device* (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Tuple: (datetime.datetime object, offset in seconds)

```
>>> device = ics.open_device()
>>> ics.get_rtc(device)
(datetime.datetime(2014, 9, 10, 17, 45, 45), 3)
```

ics.get_script_status()

Accepts a `ics.NeoDevice`, exception on error. Returns a list of values of what `ulParameters` would hold

ics.get_serial_number(device)

Gets the serial number out of the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Int: Serial Number Version

```
>>> ics.get_serial_number(device)
53123
```

ics.get_timestamp_for_msg(device, msg)

Calculates the timestamp for a message.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

msg (*ics.SpyMessage*): *ics.SpyMessage*

Raises: *ics.RuntimeError*

Returns: Float: Timestamp for the message.

```
>>> import ics
>>> d = ics.open_device()
>>> msgs, error_count = ics.get_messages(d)
>>> ics.get_timestamp_for_msg(d, msgs[0])
354577568.9145524
```

ics.icsneoFirmwareUpdateRequired()

Note: Identical to PEP8 compliant *ics.firmware_update_required()* method.

ics.icsneoForceFirmwareUpdate()

Note: Identical to PEP8 compliant *ics.force_firmware_update()* method.

ics.icsneoGetActiveVNETChannel()

Note: Identical to PEP8 compliant *ics.get_active_vnet_channel()* method.

ics.icsneoGetBackupPowerEnabled()

Note: Identical to PEP8 compliant `ics.get_backup_power_enabled()` method.

`ics.icsneoGetBackupPowerReady()`

Note: Identical to PEP8 compliant `ics.get_backup_power_ready()` method.

`ics.icsneoGetDLLFirmwareInfo()`

Note: Identical to PEP8 compliant `ics.get_dll_firmware_info()` method.

`ics.icsneoGetDeviceStatus()`

Note: Identical to PEP8 compliant `ics.get_device_status()` method.

`ics.icsneoGetFireSettings()`

Note: Identical to PEP8 compliant `ics.get_device_settings()` method.

`ics.icsneoGetTimeStampForMsg()`

Note: Identical to PEP8 compliant `ics.get_timestamp_for_msg()` method.

`ics.icsneoGetVCAN3Settings()`

Note: Identical to PEP8 compliant `ics.get_device_settings()` method.

`ics.icsneoISO15765_DisableNetworks()`

Note: Identical to PEP8 compliant `ics.iso15765_disable_networks()` method.

`ics.icsneoISO15765_EnableNetworks()`

Note: Identical to PEP8 compliant `ics.iso15765_enable_networks()` method.

`ics.icsneoISO15765_ReceiveMessage()`

Note: Identical to PEP8 compliant `ics.iso15765_receive_message()` method.

`ics.icsneoISO15765_TransmitMessage()`

Note: Identical to PEP8 compliant `ics.iso15765_transmit_message()` method.

`ics.icsneoLoadDefaultSettings()`

Note: Identical to PEP8 compliant `ics.load_default_settings()` method.

`ics.icsneoReadSDCard()`

Note: Identical to PEP8 compliant `ics.read_sdcard()` method.

`ics.icsneoScriptGetScriptStatusEx()`

Note: Identical to PEP8 compliant `ics.get_script_status()` method.

`ics.icsneoSetActiveVNETChannel()`

Note: Identical to PEP8 compliant `ics.set_active_vnet_channel()` method.

`ics.icsneoSetBackupPowerEnabled()`

Note: Identical to PEP8 compliant `ics.set_backup_power_enabled()` method.

`ics.icsneoSetBitRate()`

Note: Identical to PEP8 compliant `ics.set_bit_rate()` method.

`ics.icsneoSetBitRateEx()`

Note: Identical to PEP8 compliant `ics.set_bit_rate_ex()` method.

`ics.icsneoSetContext()`

Note: Identical to PEP8 compliant `ics.set_context()` method.

`ics.icsneoSetFDBitRate()`

Note: Identical to PEP8 compliant `ics.set_fd_bit_rate()` method.

`ics.icsneoSetFireSettings()`

Note: Identical to PEP8 compliant `ics.set_device_settings()` method.

`ics.icsneoSetVCAN3Settings()`

Note: Identical to PEP8 compliant `ics.set_device_settings()` method.

`ics.icsneoWriteSDCard()`

Note: Identical to PEP8 compliant `ics.write_sdcard()` method.

`ics.iso15765_disable_networks(device)`

Disables ISO15765 networks.

Args: device (`ics.NeoDevice`): `ics.NeoDevice`

Raises: `ics.RuntimeError`

Returns: None

`ics.iso15765_enable_networks(device, networks)`

Enables ISO15765 networks.

Args: device (`ics.NeoDevice`): `ics.NeoDevice`

Raises: `ics.RuntimeError`

Returns: None

`ics.iso15765_receive_message(device, iIndex)`

Receives an ISO15765 Message.

Args: device (`ics.NeoDevice`): `ics.NeoDevice`

Raises: `ics.RuntimeError`

Returns: Boolean: True on success, False on failure.

`ics.iso15765_transmit_message(device, ulNetworkID, pMsg, ulBlockingTimeout)`

Transmits an ISO15765 Message.

Args: device (`ics.NeoDevice`): `ics.NeoDevice`

pMsg (`ics.CmISO157652TxMessage`): `ics.CmISO157652TxMessage`

Raises: `ics.RuntimeError`

Returns: Boolean: True on success, False on failure.

`ics.load_default_settings(device)`

Load the default settings in the device.

Args: device (`ics.NeoDevice`): `ics.NeoDevice`

Raises: `ics.RuntimeError`

Returns: None.

```
>>> device = ics.open_device()
>>> settings = ics.load_default_settings(device)
>>>
```

`ics.open_device(device)`

Opens the device. *device* can be omitted to return a `ics.NeoDevice` of the first free available device, a `ics.NeoDevice`, or a serial number of the device.

Args: device (`ics.NeoDevice`): `ics.NeoDevice`

device (int): Serial Number of the device

bNetworkIDs (int): Network Enables

bConfigRead (int): Config Read

iOptions (int): DEVICE_OPTION_* defines

stOptionsOpenNeoEx (int): Usually ics.NETID_CAN, if needed

Raises: `ics.RuntimeError`

Returns: If `ics.NeoDevice` is passed as a parameter, None. If serial number is passed as a parameter, a `ics.NeoDevice` will be returned. If *device* parameter is omitted, a `ics.NeoDevice` will be returned with the first available free device.

```
>>> for device in ics.find_devices():
...     ics.open_device(device)
... 
```

Note: `ics.NeoDevice` will automatically close the device when it goes out of scope.

`ics.override_library_name(new_name)`

Sets active vnet channel for the device.

Args: name: Absolute path or relative path including filename.

Raises: `ics.RuntimeError`

Returns: None

```
>>> import ics
>>> ics.find_devices()
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
ics.RuntimeError: Error: find_devices(): Failed to open library: 'icsneo40.dll
↪' with error code: #126
>>> ics.override_library_name(r"C:\Windows\SysWOW64\icsneo40-different.dll")
```

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```
>>> ics.find_devices()
(<ics.NeoDevice object at 0x00284C50>, <ics.NeoDevice object at 0x007C9A10>)
```

ics.read_sdcard()

icsneoReadSDCard(), Accepts a `ics.NeoDevice` and sector index. Returns a bytearray of 512 bytes max. Exception on error.

ics.request_enter_sleep_mode (*device, timeout_ms, mode, reserved_zero*)

Signal neoVI to immediate go to sleep. Currently only supported by FIREVNET/PLASMA. If using over USB this will likely return true but never cause PLASMA to sleep since USB insertion keeps it alive. This API allows Android/Linux applications to invoke power management.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

timeout_ms (int): 16bit word for how long to wait on idle bus before going to sleep. If caller does not want to change it pass in 65535 (0xFFFF) and it will stay whatever it was set to in explorer/coremini.

mode (int): 16bit word for power mode to enter. If caller does not want to change it pass in 65535 (0xFFFF) and it will stay whatever it was set to in explorer/coremini. If it is zero then neoVI will do 'normal sleep'. 0 - power mode off but calling this function will do 'normal sleep'. 1 - normal sleep. 2 - instant sleep. 3 - comatose sleep.

reserved_zero (int): Reserved, Keep as zero.

Raises: *ics.RuntimeError*

Returns: Boolean: True on success, False on failure.

```
>>> ics.request_enter_sleep_mode(device, 1, 0)
True
```

ics.set_active_vnet_channel (*device, channel*)

Sets active vnet channel for the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Boolean: True on success, False on failure.

ics.set_backup_power_enabled (*device, enable*)

Sets the device backup power enabled for the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Boolean: True on success, False on failure.

ics.set_bit_rate (*device, BitRate, NetworkID*)

Sets the bitrate for a given Network ID on the device..

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: *ics.RuntimeError*

Returns: Int: None.

ics.set_bit_rate_ex ()

ics.set_fd_bit_rate_ex(device, BitRate, NetworkID, iOptions)

Sets the bitrate for a given Network ID on the device with extended options.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

Raises: `ics.RuntimeError`

Returns: Int: None.

`ics.set_context(device)`

Sets the “context” of how `icsneoFindNeoDevices(Ex)` and `icsneoOpenNeoDevice(Ex)` function. If the context is 0 (null) than `icsneoFindNeoDevices(Ex)` will be system wide, searching USB and other supported computer interfaces. `icsneoFindNeoDevices` can then be used to connect to devices found in this manner. If the context is a handle to connected CAN tool than `icsneoFindNeoDevices(Ex)` will search a specific CAN bus for supported IntrepidCS CAN Nodes. Again `icsneoOpenNeoDevice(Ex)` would be used create logical connections to found CAN Nodes.

Args: device (`ics.NeoDevice`): `ics.NeoDevice`

Raises: `ics.RuntimeError`

Returns: Boolean: True on success, False on failure.

```
>>> ics.set_context(device)
True
```

`ics.set_device_settings(device, settings)`

Sets the settings in the device.

Args: device (`ics.NeoDevice`): `ics.NeoDevice`

settings (`ics.Vcan3Settings`): `ics.Vcan3Settings`

or:

settings (`ics.FireSettings`): `ics.FireSettings`

Raises: `ics.RuntimeError`

Returns: None.

```
>>> device = ics.open_device()
>>> settings = ics.get_device_settings(device)
>>> type(settings)
<class 'ics.FireSettings'>
>>> settings.can1.Mode
0
>>> settings.can1.Mode = 3
>>> ics.set_device_settings(device, settings)
>>>
```

`ics.set_fd_bit_rate(device, BitRate, NetworkID)`

Sets the FD bitrate for a given Network ID on the device..

Args: device (`ics.NeoDevice`): `ics.NeoDevice`

Raises: `ics.RuntimeError`

Returns: Int: None.

`ics.set_reflash_callback(callback)`

Sets the reflash display callback.

Args: callback (function): Must be a callable Python function (`def callback(msg, progress)`)

Raises: `ics.RuntimeError`

Returns: None.

```
>>> def callback(msg, progress):
...     print(msg, progress)
...
>>> ics.set_reflash_callback(callback)
>>>
```

`ics.set_rtc(device[, time])`

Sets the Real-Time Clock of the device.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

ime (datetime.datetime): Optional. Sets to current time, if omitted.

Raises: *ics.RuntimeError*

Returns: None.

```
>>> device = ics.open_device()
>>> ics.set_rtc(device)
```

`ics.transmit_messages(device, messages)`

Transmits message(s) on the device. *messages* can be a tuple of *ics.SpyMessage*

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

messages (*ics.SpyMessage*): *ics.SpyMessage*

Raises: *ics.RuntimeError*

Returns: None.

```
>>> device = ics.open_device()
>>> msg = ics.SpyMessage()
>>> msg.ArbIDOrHeader = 0xFF
>>> msg.NetworkID = ics.NETID_HSCAN
>>> msg.Data = (0,1,2,3,4,5,6,7)
>>> ics.transmit_messages(device, msg)
>>>
```

`ics.validate_hobject(device)`

Validates the handle is valid for a *device*. Handles are only valid when the device is open.

Args: device (*ics.NeoDevice*): *ics.NeoDevice*

or:

device (int): c style integer handle to the device.

Raises: *ics.RuntimeError*

Returns: Boolean: True if valid, false otherwise.

```
>>> device = ics.open_device()
>>> ics.validate_hobject(device)
1
>>> ics.validate_hobject(device._Handle)
1
```

`ics.write_sdcard()`

`icsneoReadSDCard()`, Accepts a *ics.NeoDevice*, sector index, and a bytearray of 512 bytes. Exception on error.

CHAPTER 1

Function List

<code>ics.close_device</code>	Closes the device.
<code>ics.coremini_clear</code>	Clears the CoreMini into the device.
<code>ics.coremini_get_fblock_status</code>	Gets the status of a Coremini Function Block at <i>index</i> on <i>device</i> .
<code>ics.coremini_get_status</code>	Gets the status of the CoreMini in the device.
<code>ics.coremini_load</code>	Loads the CoreMini into the device.
<code>ics.coremini_read_app_signal</code>	Gets the value of a Coremini application signal at <i>index</i> on <i>device</i> .
<code>ics.coremini_read_rx_message</code>	Gets the value of a Coremini Message at <i>index</i> on <i>device</i> .
<code>ics.coremini_read_tx_message</code>	Gets the value of a Coremini Message at <i>index</i> on <i>device</i> .
<code>ics.coremini_start</code>	Starts the CoreMini into the device.
<code>ics.coremini_start_fblock</code>	Starts a Coremini Function Block at <i>index</i> on <i>device</i> .
<code>ics.coremini_stop</code>	Stops the CoreMini into the device.
<code>ics.coremini_stop_fblock</code>	Stops a Coremini Function Block at <i>index</i> on <i>device</i> .
<code>ics.coremini_write_app_signal</code>	Sets the value of a Coremini application signal at <i>index</i> on <i>device</i> .
<code>ics.coremini_write_rx_message</code>	TODO
<code>ics.coremini_write_tx_message</code>	TODO
<code>ics.create_neovi_radio_message</code>	Python API only.
<code>ics.find_devices</code>	Finds all connected devices and returns a tuple of <code>ics.NeoDevice</code> for use in <code>ics.open_device()</code>
<code>ics.firmware_update_required</code>	Determines if the device firmware needs flashing.
<code>ics.force_firmware_update</code>	Forces the device to flash firmware.
<code>ics.get_active_vnet_channel</code>	Gets active vnet channel for the device.
<code>ics.get_backup_power_enabled</code>	Returns the device backup power enabled for the device.
<code>ics.get_backup_power_ready</code>	Returns the device backup power is ready for the device.
<code>ics.get_device_settings</code>	Gets the settings in the device.
<code>ics.get_device_status</code>	Returns the device status.

Continued on next page

Table 1 – continued from previous page

<code>ics.get_dll_firmware_info</code>	Returns the DLL firmware info for the device.
<code>ics.get_dll_version</code>	Gets the DLL version.
<code>ics.get_error_messages</code>	Gets the error message(s) on the device.
<code>ics.get_hw_firmware_info</code>	Returns the device firmware info for the device.
<code>ics.get_last_api_error</code>	Gets the error message from the last API call.
<code>ics.get_library_path</code>	
<code>ics.get_messages</code>	Gets the message(s) on the device.
<code>ics.get_performance_parameters</code>	Gets the Performance Parameters on <i>device</i> .
<code>ics.get_rtc</code>	Gets the Real-Time Clock of the device.
<code>ics.get_script_status</code>	Accepts a <code>ics.NeoDevice</code> , exception on error.
<code>ics.get_serial_number</code>	Gets the serial number out of the device.
<code>ics.get_timestamp_for_msg</code>	Calculates the timestamp for a message.
<code>ics.iso15765_disable_networks</code>	Disables ISO15765 networks.
<code>ics.iso15765_enable_networks</code>	Enables ISO15765 networks.
<code>ics.iso15765_receive_message</code>	Receives an ISO15765 Message.
<code>ics.iso15765_transmit_message</code>	Transmits an ISO15765 Message.
<code>ics.load_default_settings</code>	Load the default settings in the device.
<code>ics.open_device</code>	Opens the device.
<code>ics.override_library_name</code>	Sets active vnet channel for the device.
<code>ics.read_sdcard</code>	<code>icsneoReadSDCard()</code> , Accepts a <code>ics.NeoDevice</code> and sector index.
<code>ics.request_enter_sleep_mode</code>	Signal neoVI to immediate go to sleep.
<code>ics.set_active_vnet_channel</code>	Sets active vnet channel for the device.
<code>ics.set_backup_power_enabled</code>	Sets the device backup power enabled for the device.
<code>ics.set_bit_rate</code>	Sets the bitrate for a given Network ID on the device..
<code>ics.set_bit_rate_ex</code>	<code>ics.set_fd_bit_rate_ex(device, BitRate, NetworkID, iOptions)</code>
<code>ics.set_context</code>	Sets the “context” of how <code>icsneoFindNeoDevices(Ex)</code> and <code>icsneoOpenNeoDevice(Ex)</code> function.
<code>ics.set_device_settings</code>	Sets the settings in the device.
<code>ics.set_fd_bit_rate</code>	Sets the FD bitrate for a given Network ID on the device..
<code>ics.set_reflash_callback</code>	Sets the reflash display callback.
<code>ics.set_rtc</code>	Sets the Real-Time Clock of the device.
<code>ics.transmit_messages</code>	Transmits message(s) on the device.
<code>ics.validate_hobject</code>	Validates the handle is valid for a <i>device</i> .
<code>ics.write_sdcard</code>	<code>icsneoReadSDCard()</code> , Accepts a <code>ics.NeoDevice</code> , sector index, and a bytearray of 512 bytes.
<code>ics.ClosePort</code>	
<code>ics.FindNeoDevices</code>	
<code>ics.GetDLLVersion</code>	
<code>ics.GetErrorMessages</code>	
<code>ics.GetHWFirmwareInfo</code>	
<code>ics.GetLastAPIError</code>	
<code>ics.GetMessages</code>	
<code>ics.GetPerformanceParameters</code>	
<code>ics.GetRTC</code>	
<code>ics.GetSerialNumber</code>	
<code>ics.OpenNeoDevice</code>	
<code>ics.RequestEnterSleepMode</code>	

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<i>ics.ScriptClear</i>	
<i>ics.ScriptGetFBlockStatus</i>	
<i>ics.ScriptGetScriptStatus</i>	
<i>ics.ScriptLoad</i>	
<i>ics.ScriptReadAppSignal</i>	
<i>ics.ScriptReadRxMessage</i>	
<i>ics.ScriptReadTxMessage</i>	
<i>ics.ScriptStart</i>	
<i>ics.ScriptStartFBlock</i>	
<i>ics.ScriptStop</i>	
<i>ics.ScriptStopFBlock</i>	
<i>ics.ScriptWriteAppSignal</i>	
<i>ics.ScriptWriteRxMessage</i>	
<i>ics.ScriptWriteTxMessage</i>	
<i>ics.SetRTC</i>	
<i>ics.SetReflashDisplayCallback</i>	
<i>ics.TxMessages</i>	
<i>ics.ValidateHObject</i>	
<i>ics.base36enc</i>	Converts a decimal serial number to base36.
<i>ics.icsneoFirmwareUpdateRequired</i>	
<i>ics.icsneoForceFirmwareUpdate</i>	
<i>ics.icsneoGetActiveVNETChannel</i>	
<i>ics.icsneoGetBackupPowerEnabled</i>	
<i>ics.icsneoGetBackupPowerReady</i>	
<i>ics.icsneoGetDLLFirmwareInfo</i>	
<i>ics.icsneoGetDeviceStatus</i>	
<i>ics.icsneoGetFireSettings</i>	
<i>ics.icsneoGetTimeStampForMsg</i>	
<i>ics.icsneoGetVCAN3Settings</i>	
<i>ics.icsneoISO15765_DisableNetworks</i>	
<i>ics.icsneoISO15765_EnableNetworks</i>	
<i>ics.icsneoISO15765_ReceiveMessage</i>	
<i>ics.icsneoISO15765_TransmitMessage</i>	
<i>ics.icsneoLoadDefaultSettings</i>	
<i>ics.icsneoReadSDCard</i>	
<i>ics.icsneoScriptGetScriptStatusEx</i>	
<i>ics.icsneoSetActiveVNETChannel</i>	
<i>ics.icsneoSetBackupPowerEnabled</i>	
<i>ics.icsneoSetBitRate</i>	
<i>ics.icsneoSetBitRateEx</i>	
<i>ics.icsneoSetContext</i>	
<i>ics.icsneoSetFDBitRate</i>	
<i>ics.icsneoSetFireSettings</i>	
<i>ics.icsneoSetVCAN3Settings</i>	
<i>ics.icsneoWriteSDCard</i>	

CHAPTER 2

Variables

```
ics.AUTO = 0
ics.BPS100 = 5
ics.BPS1000 = 10
ics.BPS100000 = 7
ics.BPS10400 = 1
ics.BPS117647 = 8
ics.BPS125 = 6
ics.BPS20 = 0
ics.BPS2000 = 12
ics.BPS250 = 7
ics.BPS33 = 1
ics.BPS33333 = 2
ics.BPS4000 = 13
ics.BPS50 = 2
ics.BPS500 = 8
ics.BPS5000 = 0
ics.BPS50000 = 3
ics.BPS62 = 3
ics.BPS62500 = 4
ics.BPS666 = 11
ics.BPS71429 = 5
ics.BPS800 = 9
```

```
ics.BPS83 = 4
ics.BPS83333 = 6
ics.BUILD_DATETIME = May 29 2018 16:04:26
ics.CANFD_BRS_ENABLED = 2
ics.CANFD_BRS_ENABLED_ISO = 4
ics.CANFD_ENABLED = 1
ics.CANFD_ENABLED_ISO = 3
ics.CANFD_SETTINGS_SIZE = 10
ics.CANTERM_SETTINGS_SIZE = 6
ics.CAN_BPS10000 = 17
ics.CAN_BPS5000 = 14
ics.CAN_BPS6667 = 15
ics.CAN_BPS8000 = 16
ics.CAN_SETTINGS_SIZE = 12
ics.DISABLE = 1
ics.ETHERNET_SETTINGS_SIZE = 8
ics.FAST_MODE = 3
ics.GLOBAL_SETTINGS_SIZE = 908
ics.GS_VERSION = 5
ics.ISO15765_2_NETWORK_HSCAN = 1
ics.ISO15765_2_NETWORK_HSCAN2 = 4
ics.ISO15765_2_NETWORK_HSCAN3 = 8
ics.ISO15765_2_NETWORK_HSCAN4 = 20
ics.ISO15765_2_NETWORK_HSCAN5 = 24
ics.ISO15765_2_NETWORK_HSCAN6 = 28
ics.ISO15765_2_NETWORK_HSCAN7 = 32
ics.ISO15765_2_NETWORK_MSCAN = 2
ics.ISO15765_2_NETWORK_SWCAN = 16
ics.ISO15765_2_NETWORK_SWCAN2 = 36
ics.ISO9141_KEYWORD2000_SETTINGS_SIZE = 114
ics.ISO9141_KEYWORD2000__INIT_STEP_SIZE = 6
ics.J1708_SETTINGS_SIZE = 2
ics.LIN_SETTINGS_SIZE = 10
ics.LISTEN_ALL = 7
ics.LISTEN_ONLY = 3
ics.LOOPBACK = 2
```



```
ics.NEODEVICE_ALL = -16385
ics.NEODEVICE_ANY_ION = 1310720
ics.NEODEVICE_ANY_PLASMA = 208896
ics.NEODEVICE_BLUE = 1
ics.NEODEVICE_CMPROBE = 8388608
ics.NEODEVICE_CT_OBD = 32768
ics.NEODEVICE_DW_VCAN = 4
ics.NEODEVICE_ECU = 128
ics.NEODEVICE_ECUCCHIP_UART = 2048
ics.NEODEVICE_EEVB = 16777216
ics.NEODEVICE_FIRE = 8
ics.NEODEVICE_FIRE2 = 67108864
ics.NEODEVICE_FIRE_VNET = 8192
ics.NEODEVICE_FLEX = 134217728
ics.NEODEVICE_IEVB = 256
ics.NEODEVICE_ION_2 = 262144
ics.NEODEVICE_ION_3 = 1048576
ics.NEODEVICE_NEOANALOG = 16384
ics.NEODEVICE_NEOECUCCHIP = 256
ics.NEODEVICE_OBD2_PRO = 1024
ics.NEODEVICE_OBD2_SIM = -2147483648
ics.NEODEVICE_PENDANT = 512
ics.NEODEVICE_PLASMA_1_11 = 4096
ics.NEODEVICE_PLASMA_1_12 = 65536
ics.NEODEVICE_PLASMA_1_13 = 131072
ics.NEODEVICE_RADGALAXY = 268435456
ics.NEODEVICE_RADSTAR = 524288
ics.NEODEVICE_RADSTAR2 = 536870912
ics.NEODEVICE_RED = 64
ics.NEODEVICE_SW_VCAN = 2
ics.NEODEVICE_UNKNOWN = 0
ics.NEODEVICE_VCAN3 = 16
ics.NEODEVICE_VCAN4 = 2097152
ics.NEODEVICE_VCAN4_12 = 4194304
ics.NEODEVICE_VCANRF = 33554432
ics.NEODEVICE_VIVIDCAN = 1073741824
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ics.NEOVI6_VCAN_TIMESTAMP_1 = 1e-06
ics.NEOVI6_VCAN_TIMESTAMP_2 = 0.065536
ics.NEOVIPRO_VCAN_TIMESTAMP_1 = 1e-06
ics.NEOVIPRO_VCAN_TIMESTAMP_2 = 0.065536
ics.NEOVI_3G_MAX_SETTINGS_SIZE = 908
ics.NEOVI_COMMTYPE_FIRE_USB = 5
ics.NEOVI_COMMTYPE_RS232 = 0
ics.NEOVI_COMMTYPE_TCPIP = 3
ics.NEOVI_COMMTYPE_USB_BULK = 1
ics.NEOVI_RED_TIMESTAMP_1_10NS = 1e-08
ics.NEOVI_RED_TIMESTAMP_1_25NS = 2.5e-08
ics.NEOVI_RED_TIMESTAMP_2_10NS = 429.4967296
ics.NEOVI_RED_TIMESTAMP_2_25NS = 107.3741824
ics.NEOVI_TIMESTAMP_1 = 1.6e-06
ics.NEOVI_TIMESTAMP_2 = 0.1048576
ics.NEO_CFG_MPIC_HS_CAN_CNF1 = 522
ics.NEO_CFG_MPIC_HS_CAN_CNF2 = 521
ics.NEO_CFG_MPIC_HS_CAN_CNF3 = 520
ics.NEO_CFG_MPIC_HS_CAN_MODE = 566
ics.NEO_CFG_MPIC_LSFT_CAN_CNF1 = 558
ics.NEO_CFG_MPIC_LSFT_CAN_CNF2 = 557
ics.NEO_CFG_MPIC_LSFT_CAN_CNF3 = 556
ics.NEO_CFG_MPIC_MS_CAN_CNF1 = 534
ics.NEO_CFG_MPIC_MS_CAN_CNF2 = 533
ics.NEO_CFG_MPIC_MS_CAN_CNF3 = 532
ics.NEO_CFG_MPIC_SW_CAN_CNF1 = 546
ics.NEO_CFG_MPIC_SW_CAN_CNF2 = 545
ics.NEO_CFG_MPIC_SW_CAN_CNF3 = 544
ics.NETID_3G_APP_SIGNAL_STATUS = 56
ics.NETID_3G_FB_STATUS = 55
ics.NETID_3G_LOGGING_OVERFLOW = 59
ics.NETID_3G_READ_DATA LINK_CM_RX_MSG = 58
ics.NETID_3G_READ_DATA LINK_CM_TX_MSG = 57
ics.NETID_3G_READ_SETTINGS_EX = 60
ics.NETID_3G_RESET_STATUS = 54
ics.NETID_AUX = 7
```

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ics.NETID_CGI = 53
ics.NETID_DATA_TO_HOST = 70
ics.NETID_DEVICE = 0
ics.NETID_DEVICE_STATUS = 513
ics.NETID_ETHERNET = 93
ics.NETID_ETHERNET_DAQ = 69
ics.NETID_FLEXRAY = 85
ics.NETID_FLEXRAY1A = 80
ics.NETID_FLEXRAY1B = 81
ics.NETID_FLEXRAY2 = 86
ics.NETID_FLEXRAY2A = 82
ics.NETID_FLEXRAY2B = 83
ics.NETID_FORDSCP = 5
ics.NETID_GMFSA = 94
ics.NETID_HSCAN = 1
ics.NETID_HSCAN2 = 42
ics.NETID_HSCAN3 = 44
ics.NETID_HSCAN4 = 61
ics.NETID_HSCAN5 = 62
ics.NETID_HSCAN6 = 96
ics.NETID_HSCAN7 = 97
ics.NETID_HW_COM_LATENCY_TEST = 512
ics.NETID_I2C1 = 71
ics.NETID_INVALID = 65535
ics.NETID_ISO = 9
ics.NETID_ISO14230 = 15
ics.NETID_ISO2 = 14
ics.NETID_ISO3 = 41
ics.NETID_ISO4 = 47
ics.NETID_ISOPIC = 10
ics.NETID_J1708 = 6
ics.NETID_JVPW = 8
ics.NETID_LIN = 16
ics.NETID_LIN2 = 48
ics.NETID_LIN3 = 49
ics.NETID_LIN4 = 50
```

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ics.NETID_LIN5 = 84
ics.NETID_LIN6 = 98
ics.NETID_LSFTCAN = 4
ics.NETID_LSFTCAN2 = 99
ics.NETID_MAIN51 = 11
ics.NETID_MAX = 100
ics.NETID_MOST = 51
ics.NETID_MOST150 = 92
ics.NETID_MOST25 = 90
ics.NETID_MOST50 = 91
ics.NETID_MSCAN = 2
ics.NETID_OP_ETHERNET1 = 17
ics.NETID_OP_ETHERNET10 = 78
ics.NETID_OP_ETHERNET11 = 79
ics.NETID_OP_ETHERNET12 = 87
ics.NETID_OP_ETHERNET2 = 18
ics.NETID_OP_ETHERNET3 = 19
ics.NETID_OP_ETHERNET4 = 45
ics.NETID_OP_ETHERNET5 = 46
ics.NETID_OP_ETHERNET6 = 73
ics.NETID_OP_ETHERNET7 = 75
ics.NETID_OP_ETHERNET8 = 76
ics.NETID_OP_ETHERNET9 = 77
ics.NETID_RED = 12
ics.NETID_RED_APP_ERROR = 52
ics.NETID_RED_VBAT = 74
ics.NETID_RS232 = 63
ics.NETID_SCI = 13
ics.NETID_SPI1 = 72
ics.NETID_SWCAN = 3
ics.NETID_SWCAN2 = 68
ics.NETID_TCP = 95
ics.NETID_TEXTAPI_TO_HOST = 71
ics.NETID_UART = 64
ics.NETID_UART2 = 65
ics.NETID_UART3 = 66
```

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ics.NETID_UART4 = 67
ics.NORMAL = 0
ics.NORMAL_MODE = 2
ics.NO_CANFD = 0
ics.OPETH_FUNC_MEDIACONVERTER = 1
ics.OPETH_FUNC_TAP = 0
ics.OPETH_FUNC_TAP_LOW_LATENCY = 2
ics.OPETH_LINK_AUTO = 0
ics.OPETH_LINK_MASTER = 1
ics.OPETH_LINK_SLAVE = 2
ics.OPETH_MAC_SPOOF_DST_ADDR = 0
ics.OPETH_MAC_SPOOF_SRC_ADDR = 1
ics.OP_ETH_GENERAL_SETTINGS_SIZE = 20
ics.OP_ETH_SETTINGS_SIZE = 16
ics.PLASMA_SLAVE1_OFFSET = 100
ics.PLASMA_SLAVE1_OFFSET_RANGE2 = 4608
ics.PLASMA_SLAVE2_OFFSET = 200
ics.PLASMA_SLAVE2_OFFSET_RANGE2 = 8704
ics.PLASMA_SLAVE3_OFFSET_RANGE2 = 12800
ics.PLASMA_SLAVE_NUM = 51
ics.REPORT_ON_GPS = 15
ics.REPORT_ON_KLINE = 9
ics.REPORT_ON_LED1 = 7
ics.REPORT_ON_LED2 = 8
ics.REPORT_ON_MISC1 = 1
ics.REPORT_ON_MISC2 = 2
ics.REPORT_ON_MISC3 = 3
ics.REPORT_ON_MISC3_AIN = 10
ics.REPORT_ON_MISC4 = 4
ics.REPORT_ON_MISC4_AIN = 11
ics.REPORT_ON_MISC5 = 5
ics.REPORT_ON_MISC5_AIN = 12
ics.REPORT_ON_MISC6 = 6
ics.REPORT_ON_MISC6_AIN = 13
ics.REPORT_ON_PERIODIC = 0
ics.REPORT_ON_PWM_IN1 = 14
```

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ics.RESISTOR_OFF = 1
ics.RESISTOR_ON = 0
ics.SCRIPT_LOCATION_FLASH_MEM = 0
ics.SCRIPT_LOCATION_INTERNAL_FLASH = 2
ics.SCRIPT_LOCATION_SDCARD = 1
ics.SCRIPT_LOCATION_VCAN3_MEM = 4
ics.SCRIPT_STATUS_RUNNING = 1
ics.SCRIPT_STATUS_STOPPED = 0
ics.SLEEP_MODE = 0
ics.SLOW_MODE = 1
ics.SPY_PROTOCOL_BEAN = 11
ics.SPY_PROTOCOL_CAN = 1
ics.SPY_PROTOCOL_CANFD = 30
ics.SPY_PROTOCOL_CGI = 18
ics.SPY_PROTOCOL_CHRYSLER_CCD = 8
ics.SPY_PROTOCOL_CHRYSLER_JVPW = 14
ics.SPY_PROTOCOL_CHRYSLER_SCI = 9
ics.SPY_PROTOCOL_CUSTOM = 0
ics.SPY_PROTOCOL_DALLAS_1WIRE = 25
ics.SPY_PROTOCOL_ETHERNET = 29
ics.SPY_PROTOCOL_FLEXRAY = 16
ics.SPY_PROTOCOL_FORD_UBP = 10
ics.SPY_PROTOCOL_GENERIC_MANCHSESTER = 26
ics.SPY_PROTOCOL_GENERIC_UART = 22
ics.SPY_PROTOCOL_GME_CIM_SCL_KLINE = 19
ics.SPY_PROTOCOL_GMFSA = 31
ics.SPY_PROTOCOL_GMLAN = 2
ics.SPY_PROTOCOL_GM_ALDL_UART = 7
ics.SPY_PROTOCOL_I2C = 21
ics.SPY_PROTOCOL_ISO9141 = 5
ics.SPY_PROTOCOL_J1708 = 13
ics.SPY_PROTOCOL_J1850PWM = 4
ics.SPY_PROTOCOL_J1850VPW = 3
ics.SPY_PROTOCOL_J1939 = 15
ics.SPY_PROTOCOL_JTAG = 23
ics.SPY_PROTOCOL_LIN = 12
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ics.SPY_PROTOCOL_MOST = 17
ics.SPY_PROTOCOL_SENT_PROTOCOL = 27
ics.SPY_PROTOCOL_SPI = 20
ics.SPY_PROTOCOL_TCP = 32
ics.SPY_PROTOCOL_UART = 28
ics.SPY_PROTOCOL_UNIO = 24
ics.SPY_STATUS2_CAN_HAVE_LINK_DATA = 4194304
ics.SPY_STATUS2_CAN_ISO15765_LOGICAL_FRAME = 2097152
ics.SPY_STATUS2_END_OF_LONG_MESSAGE = 1048576
ics.SPY_STATUS2_ERROR_FRAME = 131072
ics.SPY_STATUS2_ETHERNET_CRC_ERROR = 2097152
ics.SPY_STATUS2_ETHERNET_FCS_AVAILABLE = 8388608
ics.SPY_STATUS2_ETHERNET_FRAME_TOO_SHORT = 4194304
ics.SPY_STATUS2_ETHERNET_NO_PADDING = 16777216
ics.SPY_STATUS2_ETHERNET_PREEMPTION_ENABLED = 33554432
ics.SPY_STATUS2_FLEXRAY_NO_CRC = 33554432
ics.SPY_STATUS2_FLEXRAY_NO_HEADERCRC = 67108864
ics.SPY_STATUS2_FLEXRAY_TX_AB = 2097152
ics.SPY_STATUS2_FLEXRAY_TX_AB_NO_A = 4194304
ics.SPY_STATUS2_FLEXRAY_TX_AB_NO_B = 8388608
ics.SPY_STATUS2_FLEXRAY_TX_AB_NO_MATCH = 16777216
ics.SPY_STATUS2_GLOBAL_CHANGE = 65536
ics.SPY_STATUS2_HAS_VALUE = 1
ics.SPY_STATUS2_HIGH_VOLTAGE = 4
ics.SPY_STATUS2_ISO_FRAME_ERROR = 134217728
ics.SPY_STATUS2_ISO_OVERFLOW_ERROR = 268435456
ics.SPY_STATUS2_ISO_PARITY_ERROR = 536870912
ics.SPY_STATUS2_LIN_ERR_MSG_ID_PARITY = 67108864
ics.SPY_STATUS2_LIN_ERR_RX_BREAK_NOT_0 = 2097152
ics.SPY_STATUS2_LIN_ERR_RX_BREAK_TOO_SHORT = 4194304
ics.SPY_STATUS2_LIN_ERR_RX_DATA_GREATER_8 = 16777216
ics.SPY_STATUS2_LIN_ERR_RX_SYNC_NOT_55 = 8388608
ics.SPY_STATUS2_LIN_ERR_TX_RX_MISMATCH = 33554432
ics.SPY_STATUS2_LIN_ID_FRAME_ERROR = 268435456
ics.SPY_STATUS2_LIN_NO_SLAVE_DATA = -2147483648
ics.SPY_STATUS2_LIN_SLAVE_BYTE_ERROR = 536870912
```

```
ics.SPY_STATUS2_LIN_SYNC_FRAME_ERROR = 134217728
ics.SPY_STATUS2_LONG_MESSAGE = 8
ics.SPY_STATUS2_MOST_CHANGED_PAR = -2147483648
ics.SPY_STATUS2_MOST_CONTROL_DATA = 16777216
ics.SPY_STATUS2_MOST_I2S_DUMP = 134217728
ics.SPY_STATUS2_MOST_LOW_LEVEL = 8388608
ics.SPY_STATUS2_MOST_MHP_CONTROL_DATA = 67108864
ics.SPY_STATUS2_MOST_MHP_USER_DATA = 33554432
ics.SPY_STATUS2_MOST_MOST150 = 1073741824
ics.SPY_STATUS2_MOST_MOST50 = 536870912
ics.SPY_STATUS2_MOST_PACKET_DATA = 2097152
ics.SPY_STATUS2_MOST_TOO_SHORT = 268435456
ics.SPY_STATUS2_RX_TIMEOUT_ERROR = 1073741824
ics.SPY_STATUS2_VALUE_IS_BOOLEAN = 2
ics.SPY_STATUS3_CANFD_BRS = 16
ics.SPY_STATUS3_CANFD_ESI = 1
ics.SPY_STATUS3_CANFD_FDF = 8
ics.SPY_STATUS3_CANFD_IDE = 2
ics.SPY_STATUS3_CANFD_RTR = 4
ics.SPY_STATUS3_LIN_JUST_BREAK_SYNC = 1
ics.SPY_STATUS3_LIN_ONLY_UPDATE_SLAVE_TABLE_ONCE = 4
ics.SPY_STATUS3_LIN_SLAVE_DATA_TOO_SHORT = 2
ics.SPY_STATUS_ANALOG_DIGITAL_INPUT = 16777216
ics.SPY_STATUS_AUDIO_COMMENT = 4194304
ics.SPY_STATUS_AVSI_REC_OVERFLOW = 1048576
ics.SPY_STATUS_BAD_MESSAGE_BIT_TIME_ERROR = 16384
ics.SPY_STATUS_BREAK = 524288
ics.SPY_STATUS_BUS_RECOVERED = 1024
ics.SPY_STATUS_BUS_SHORTED_GND = 4096
ics.SPY_STATUS_BUS_SHORTED_PLUS = 2048
ics.SPY_STATUS_CANFD = 536870912
ics.SPY_STATUS_CAN_BUS_OFF = 512
ics.SPY_STATUS_CAN_ERROR_PASSIVE = 32
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ics.SPY_STATUS_EXTENDED = -2147483648
ics.SPY_STATUS_FLEXRAY_PDU = 536870912
ics.SPY_STATUS_FLEXRAY_PDU_NO_UPDATE_BIT = 8
ics.SPY_STATUS_FLEXRAY_PDU_UPDATE_BIT_SET = 1073741824
ics.SPY_STATUS_GLOBAL_ERR = 1
ics.SPY_STATUS_GPS_DATA = 8388608
ics.SPY_STATUS_HEADERCRC_ERROR = 32
ics.SPY_STATUS_HIGH_SPEED = 1073741824
ics.SPY_STATUS_INCOMPLETE_FRAME = 64
ics.SPY_STATUS_INIT_MESSAGE = 536870912
ics.SPY_STATUS_LIN_MASTER = 536870912
ics.SPY_STATUS_LOST_ARBITRATION = 128
ics.SPY_STATUS_MSG_NO_MATCH = 262144
ics.SPY_STATUS_NETWORK_MESSAGE_TYPE = 67108864
ics.SPY_STATUS_PDU = 536870912
ics.SPY_STATUS_REMOTE_FRAME = 8
ics.SPY_STATUS_TEST_TRIGGER = 2097152
ics.SPY_STATUS_TEXT_COMMENT = 33554432
ics.SPY_STATUS_TX_MSG = 2
ics.SPY_STATUS_TX_NOMATCH = 32768
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ics.SPY_STATUS_VSI_IFR_CRC_BIT = 268435456
ics.SPY_STATUS_VSI_TX_UNDERRUN = 134217728
ics.SPY_STATUS_XTD_FRAME = 4
ics.SWCAN_AUTOSWITCH_DISABLED = 0
ics.SWCAN_AUTOSWITCH_DISABLED_RESISTOR_ENABLED = 3
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